

XVII.—*A Monographic Revision of the Genus Phrynus, with Descriptions of Four remarkable new Species.* By ARTHUR GARDINER BUTLER, F.L.S., F.Z.S., &c.

[Plates VI. & VII.]

THE last list of the species of *Phrynus* was that published by Gervais in the third volume of his 'Aptères;' since then the two Kochs, Horatio Wood, and M. Lucas have all added species, bringing the total number of known forms up to twenty; one or two of these, however, will probably prove synonymous with species previously described. In the present paper I have added four new species, one of which possesses the character, hitherto unknown in the genus, of a strongly serrated front margin to the cephalothorax.

In all published descriptions of *Phrynides* I have found one very important character overlooked, namely the arrangement of the teeth in the mandibles. This character will alone serve to distinguish most of the species, and therefore should not be neglected. The mandibles are easy to extract from dried specimens, whilst with specimens in spirit this is unnecessary, for they can be drawn forward and examined without difficulty.

I have sketched the mandibles of most of the species in the collection of the British Museum; and I find that all the New-World forms are characterized by the distinct bifurcation of the first tooth in the lower mandible, this type of tooth being rare in Old-World species. The toothing of the upper mandible differs more or less in the bulk of the species, even between species in which the toothing of the lower mandible is identical.

Genus PHRYNUS, Olivier.

American Species.

1. *Phrynus cheiracanthus*. Pl. VI. fig. 1.

Phrynus cheiracanthus, Gervais, Brit. Mus. 1842; Soc. Phil. Paris, in Journ. l'Inst. p. 72 (1842); Apt. iii. p. 3. n. 3 (1844).

Hab. Type, Demerara (*Bowers*); New Granada (*Stahlschmidt*). B.M.

2. *Phrynus gorgo*.

Phrynus gorgo, Wood, Trans. Am. Phil. Soc. vol. xiii., n. s., p. 440 (1869).

Hab. "Peru" (*Wood*); Pará? B.M.

We have one example of apparently this species, larger than

the type. The first pair of legs are enormously developed, as in *P. cheiracanthus*; and the palpi are longer and more slender than in Wood's figure.

3. *Phrynus Kochii*, n. sp. Pl. VI. fig. 2.

Phrynus medius, Koch (nec Herbst), Arachn. viii. p. 8, pl. 255. fig. 593 (1841).

Hab. America (*Koch*). B.M.

4. *Phrynus asperatipes*.

Phrynus asperatipes, Wood, Journ. Acad. Nat. Sci. Philad., n. s., vol. v. pt. iv. p. 375 (1863).

Hab. "Lower California" (*Wood*).

5. *Phrynus reniformis*. Pl. VI. fig. 3.

Phalangium reniforme, Pallas, Spicil. Zool. fasc. ix. p. 43, pl. 3. fig. 3 (1772); Lichtenstein and Herbst, Natursyst. ungefl. Ins., Phalang. p. 79, pl. 5. fig. 2 (1797).

Phrynus reniformis, Gervais, Apt. iii. p. 5. n. 6 (1844); Koch, Arachn. viii. p. 12, pl. 256. fig. 600.

Cancellus araneoides, Petiver, Pterigr. pl. 20. fig. 12 (see Gervais).

Hab. Haiti (*Tweedie*). B.M.

Some young specimens in spirits of what I believe to be this species have the abdomen much elongated and the spines on the palpi very feebly developed.

6. *Phrynus variegatus*. Pl. VI. fig. 4.

Phrynus variegatus, Perty, Delect. Anim. p. 200, pl. 39. fig. 10 (1830-34); Koch, Arachn. viii. p. 10, pl. 255. fig. 599 (1841).

Hab. "River Amazon (*Perty*); Jamaica (*Gosse*); Venezuela; W. Coast. B.M.

7. *Phrynus palmatus*. Pl. VI. fig. 5.

Phalangium palmatum, Lichtenstein and Herbst, Natursyst. ungefl. Ins. p. 82, pl. 4. fig. 2 (1797).

Phrynus palmatus, Koch, Arachn. viii. p. 13, pl. 257. fig. 601 (1841).

Phrynus mexicanus, Bilimek, Verh. zool.-botan. Gesellsch. Wien, xiii. p. 905 (1867).

Hab. Colombia (*Goudot*); Mexico, Puebla (*Rouquette*). B.M.

8. *Phrynus pumilio*.

Phrynus pumilio, Koch, Arachn. viii. p. 15, pl. 257. fig. 602 (1841).

Hab. Brazil (*Koch*).

If correctly drawn, this species has a remarkably narrow cephalothorax; it seems allied to *P. fuscimanus* and *P. palmatus*.

9. *Phrynus fuscimanus*. Pl. VI. fig. 6.

Phrynus fuscimanus, Koch, Arachn. xv. p. 67, pl. 523. fig. 1463 (1848).

Hab. North America (*Koch*); Colombia (*Goudot*). B.M.

Closely allied to *P. palmatus*, but with the legs conspicuously banded.

Australasian Species.

10. *Phrynus australianus*.

Phrynus australianus, Koch, Verh. zool.-botan. Gesellsch. Wien, xvii. p. 231 (1867).

Hab. "Upolu" (*Koch*).

Asiatic Species.

11. *Phrynus Whitei*. Pl. VI. fig. 7.

Phrynus Whitei, Gervais, Brit. Mus. 1842; Bull. Soc. Phil. Paris (1842) Journ. l'Inst. p. 72 (1842); Apt. iii. p. 6. n. 9 (1844).

Hab. Burdwan (*Hardwicke*). Type, B.M.

12. *Phrynus marginemaculatus*.

Phrynus marginemaculatus, Koch, Arachn. viii. p. 6, pl. 254. fig. 597.

Hab. India (*Koch*).

I think there can be little doubt that this is the *P. Whitei* of Gervais; the spines on the palpi, however, are so much more robust in Koch's figure than in our type that I shall provisionally consider it distinct.

13. *Phrynus Grayii*. Pl. VII. fig. 1.

Phrynus Grayii, Gervais, Brit. Mus. 1842; Soc. Phil. Paris, in Journ. l'Inst. p. 72 (1842); Apt. iii. p. 4. n. 4 (1844).

Hab. Manilla (*Cuming*). In spirits and dry, B.M.

14. *Phrynus ceylanicus*.

Phrynus ceylanicus, Koch, Arachn. x. pl. 336. fig. 776 (1843).

Hab. Ceylon (*Koch*). Coll. O. P. Cambridge.

A large and (according to the Rev. O. P. Cambridge) common species; it is allied to *P. scaber*. I have examined a small example from Ceylon formerly in Mr. Saunders's collection; it is altogether much redder than Koch's figure. A larger example from Siam is intermediate in colouring between the two.

15. *Phrynus nigrimanus*.

Phrynus nigrimanus, Koch, Arachn. xv. p. 69, pl. 523. fig. 1464 (1848).

Hab. East Indies (*Koch*).

Allied to *P. scaber*.

African Species.

16. *Phrynus scaber*. Pl. VII. fig. 2.

Phryne scaber, Gervais, Apt. iii. p. 3. n. 2 (1844).

Hab. "Mauritius" (*Gervais*); Round Island (*Pike*). B.M.

17. *Phrynus medius*.

Phalangium medium, Lichtenstein and Herbst, Natursyst. ungefl. Ins., Phalang. p. 77, pl. 4. fig. 1 (1797).

Phrynus medius, Gervais, Apt. iii. p. 4. n. 5 (1844).

Hab. Fernando Po; Sierra Leone. B.M.

Gervais says that we once possessed a specimen of this species from Brazil; he probably means the *P. medius* of Koch, which is certainly distinct.

18. *Phrynus bassamensis*. Pl. VII. fig. 3.

Phrynus bassamensis, Lucas, Archiv. Entom. ii. p. 434 (1858).

Hab. "Grand Bassam in Guinea" (*Lucas*); W. Africa; Congo (*Curror*). B.M.

Nearly allied to, if not a mere variety of, *P. medius* of Herbst; the mandibles are identical in structure.

19. *Phrynus lunatus*. Pl. VII. fig. 5.

Phalangium lunatum, Fabricius, Sp. Ins. i. p. 549. n. 9; Lichtenstein and Herbst, Natursyst. ungefl. Ins., Phalang. p. 71, pl. 3 (1797).

Phrynus lunatus, Koch, Arachn. viii. p. 4, pl. 254. fig. 596 (1841).

Hab. Port Natal (*Argent*). B.M.

This is an African species allied to *P. scaber*; Koch says, however, that it comes from the East Indies.

20. *Phrynus annulatipes*. Pl. VII. fig. 4.

Phrynus annulatipes, Wood, Trans. Am. Phil. Soc. vol. xiii., n. s., p. 441 (1869).

Hab. "Zulu country" (*Wood*); Port Natal (*Gucinzius*); S. Africa; Cape of Good Hope. B.M.

A very common South-African species.

21. *Phrynus Batesi*, n. sp. Pl. VI. figs. 8, 9.

Cephalothorax dull black, mottled with ferruginous, irregularly reniform, somewhat truncated anteriorly, sparsely granulated, with well-marked marginal ridge, feebly denticulate posteriorly; median sulcus sharply defined, with four ill-defined lateral depressions; much elevated in front; the central oculiferous tubercle very prominent, subquadrate, projecting obliquely forwards; the eyes wide apart; lateral tubercles less

prominent, smaller; eyes yellow. Abdomen dull pitchy, sparsely granulated at the sides, and with regular series of minute granules in front of each segment; covered sparsely with short bristles; four longitudinal ochraceous parallel sulcæ on each side. Legs dull pitchy, becoming castaneous towards the tarsi, which are distinctly castaneous, ochraceous at the joints; the femora coarsely granulated and slightly pilose; tibiæ and tarsi covered with short hairs; palpi dull black, ochraceous at the joints, very long and slender, sparsely granulated; the coxæ pitchy, their opposing edges with numerous short tawny bristles; mandibular process pronounced; trochanter bearing four well-marked unequal spines on its antero-inferior margin (one of them considerably longer than the others), and a strong cylindrical process with ochraceous clavate termination on its postero-inferior margin; femoral joint cylindrical, its interior surface flattened and depressed, with nine well-marked spines on its basal half, most thickly grouped and longest at its basal extremity; tibial joint similar in general form to the femoral, but not flattened internally, with eleven well-marked unequal spines, the first three emitted above the middle, increasing in size, the first being about a line in length, the third about two lines; the three next, on the supero-inferior margin, are the longest, being about 4 lines in length; nearly opposite to the first of these, but emitted from the inferior margin, is a fourth long spine, about $2\frac{1}{2}$ lines in length; four short curved spines on either side of the distal end complete the series: last joint elongate, cylindrical, coarsely granulated, quadrispinose at base, the anterior spines being long and curved; terminal claw long, curved, pilose internally. Mandibles pitchy, clothed internally with long tawny hairs, long, slightly roughened anteriorly above; upper mandible with four well-developed conical teeth, the three external ones slightly shorter than the other, equal in length, united at base; lower mandible with five teeth, the first and the last being the longest, the first unequally bifid at apex (as usual in American species).

Ventral surface pitchy; the coxæ and trochanters of legs of normal type, but the coxæ of second pair of legs with unusually well-developed anterior process; abdomen rather less granulated than above; ligular process tawny, rather shorter than usual, terminating in two short bristles.

Length of body 14 lines, of mandibles extracted and opened 3 lines, of palpi 56 lines; first pair of legs about 88, second 41, third 42, fourth 43.

Hab. Upper Amazons (*Bates*). Two dried examples, B.M.

A fine species, with remarkably long and slender palpi.

I have taken measurements from our larger specimen, the other being apparently not full-grown, and consequently paler in colour. The nearest allies of this species are *P. gorgo* of Wood and *P. cheiracanthus* of Gervais.

22. *Phrynus granulosus*, n. sp. Pl. VII. figs. 10, 11, 12.

Cephalothorax dark castaneous, reniform, slightly truncated in front, coarsely granulated, with fairly well-marked marginal ridge; slightly elevated in front; the central oculiferous tubercle ovate, with central keel; eyes wide apart; lateral tubercles rounded, smaller; eyes yellow. Abdomen reddish fuscous, the segments and sides (especially the lateral sulci) ochraceous; unequally granulated transversely. Legs bright reddish castaneous, with paler bands on the femora; the ligaments of the joints pale ochreous; femora coarsely granulated and clothed with very short bristles; tibiæ and tarsi finely granulated and pilose; palpi blackish pitchy, pale ochreous at the joints; the first four joints coarsely granulated; coxæ castaneous, their opposing edges pale ochreous, clothed superiorly with short hairs; mandibular process well developed; trochanters covered in front with short spines; femoral joint semicylindrical, bearing internally about thirty-two longer or shorter spines, eleven on the upper and nine on the lower edge being longer than the remainder, but still varying considerably in length; tibial joint subcylindrical, divided longitudinally into four surfaces, formed externally by spinose ridges, bearing internally fifteen distinct and numerous obsolete spines, three alone at the distal end above being well developed, the second and third being longest, divergent, curved, and springing from the same basis; terminal joint shining black, trispinose, the two external spines much longest, curved; terminal claw long, curved, pilose internally. Mandibles pitchy, clothed internally with tawny hairs; moderately long, granulated above; upper mandible with four well-developed teeth, the first and third from the base largest, the three external ones united below; lower mandible with five teeth, the first and last the longest, the first unequally bifid at apex.

Ventral surface reddish ochraceous; the coxæ of legs subcylindrical, with anterior well-defined ridge; abdomen nearly smooth; ligular process moderately long, castaneous.

Length of body 14 lines, of mandibles extracted and opened 3 lines, of palpi 22 lines; first pair of legs 66, second 25, third 26, fourth 26.

Hab. S. America. Two in spirit, one dry, B.M.

Egg globose, ochraceous, with two series of closely approxi-

mated lunate white spots on one side, the ends of the two series being united above and below so as to produce a distinct fusiform marking.

This interesting species is allied to *P. cheiracanthus*.

23. *Phrynus longicornis*, n. sp. Pl. VII. figs. 6, 7.

Cephalothorax dull black, mottled with ferruginous, irregularly reniform, somewhat truncated in front, sparsely granulated, with tolerably well-marked marginal ridge; median sulcus sharply defined, radiating depressions ill defined; moderately elevated in front; central oculiferous tubercle very prominent, subovate; eyes wide apart; lateral tubercles much smaller, rounded; eyes yellow. Abdomen black, pitchy at the sides, irregularly transversely granulated. Legs pitchy, becoming castaneous towards tarsi; ligaments yellow; femora coarsely granulated, with strong, conical, terminal, internal tooth; tibiæ and tarsi finely granulated and pilose; palpi dull black, yellow at the joints, and with coxæ and under surface of terminal joint castaneous, coarsely granulated; the coxæ with short hairs on their opposing edges; mandibular process well developed; trochanters with four or five short denticles on antero-superior edge, otherwise exactly as in *P. Batesii*; femoral joint semicylindrical, with ten spines on its interior margins—five above (that next to the proximal end double), and five below; tibial joint similar to the femoral, with thirteen spines on its inner margins, seven above and six below, the third, fourth, and fifth above considerably longer than the others ($4\frac{1}{2}$ lines) and subparallel; terminal joint long, shining, coarsely granulated internally, quadrispinose at base, the anterior spines being twice as long as the others and slightly curved; terminal claw long, curved, pilose internally. Mandibles black, pitchy behind, clothed internally with long reddish hairs, roughened and sparsely granulated above; upper mandible with four well-developed teeth, the first and third from the base the largest, the three external ones united below; lower mandible with five teeth, the first and last the largest, the first unequally bifid at apex.

Ventral surface ferruginous; the coxæ of legs subcylindrical, with anterior well-developed ridge; abdomen nearly smooth; ligular process castaneous.

Length of body 16 lines, of mandibles extracted and opened $3\frac{1}{2}$ lines, of palpi 29 lines; first pair of legs about 99, second 44, third 45, fourth 43.

Hab. Pará (*Bates & Wallace*). Three specimens, B.M.

We have only one example of this species full-grown: our smallest specimen is nearly as dark as the one described; the

third specimen, however, is of an olive-green colour, with the stigmatiform depressions on the abdomen and the spines on palpi pale ochraceous. It must, I think, have been killed in an immature condition.

P. longicornis is allied to *P. gorgo*, and agrees with *P. cheiracanthus* in the terminal spines on femora, and with *P. granulatus* in the toothings of the mandibles.

24. *Phrynus coronatus*, n. sp. Pl. VII. figs. 8, 9.

Cephalothorax pitchy or reddish castaneous, irregularly reniform, distinctly truncated in front; the anterior margin dentate-serrate (the larger denticles, about sixteen in number, pale ochreous), coarsely granulated all over; median sulcus sharply defined; lateral radiating grooves about five on each side; central oculiferous tubercle very prominent, subovate, black; eyes wide apart, pale yellow; lateral tubercles small; eyes yellow. Abdomen dull pitchy, crossed by dirty ochreous bands, or castaneous, more or less granulated transversely. Legs covered with short hairs; the femora dirty reddish ochraceous, becoming darker towards the knee, and then suddenly ochraceous, covered with coarse dark granules, which are more or less denticulate above and below; terminal compressed spine on exterior margin well developed; tibiæ and tarsi reddish pitchy, more or less finely granulated; palpi reddish ochraceous, covered above and more sparsely below with distinct blackish granules; coxæ smooth; mandibular process prominent; trochanters with three spines on their anterior surface, one emitted from antero-inferior angle longest, also a number of small denticles, all blackish; femoral joint semi-cylindrical, bearing a number of spines on its internal margins—ten, moderately long, on the superior, and six, rather longer, on its inferior margin, besides a number of smaller spines: tibial joint three-sided, sparsely covered with short hairs; internal surface flattened, its superior margin bearing fourteen black-tipped spines, the first, third, fifth, sixth, and eighth very short, the seventh and thirteenth moderately long, the ninth and eleventh longest ($2\frac{1}{2}$ lines); twelve spines on the inferior margin, the second, fourth, ninth, and twelfth somewhat prominent, the seventh and tenth moderately long ($1\frac{1}{2}$ line); terminal joint subcylindrical, its upper and lower interior surfaces each bearing a long curved spine and two denticles; terminal claw curved, long, hairy internally. Mandibles moderately long, smooth; upper mandible with four conical teeth, the first and third longer than the others; lower mandible of the ordinary American type, becoming blackish towards the tip.

Ventral surface smooth, dull ochraceous; coxæ and trochanters of legs normal; ligular process moderately long, pilose.

Length of body 15 lines, of mandibles extracted and opened $2\frac{1}{2}$ *, of palpi 22; first pair of legs 80, second 34, third 34, fourth 33.

Hab. California. Coll. Rev. O. P. Cambridge.

The measurements of this remarkable species are taken from an adult female.

The following species has just come to my notice:—

Phrynus bacillifer.

Phrynus bacillifer, Gerstäcker, Reisen in Ost-Africa, vol. iii. Abth. ii. p. 472. n. 13 (1873) †.

Hab. "Zanzibar" (*Gerstäcker*).

Belongs to the *P. lunatus* group. It differs from *P. scaber* in size, and in the number of teeth on the shank of the palpi, &c.

EXPLANATION OF THE PLATES.

PLATE VI.

- Fig. 1.* Mandibles of *P. cheiracanthus*.
Fig. 2. " *P. Kochii*.
Fig. 3. " *P. reniformis*.
Fig. 4. " *P. variegatus*.
Fig. 5. " *P. palmatus*.
Fig. 6. " *P. fuscimanus*.
Fig. 7. " *P. Whitei*.
Figs. 8, 9. *P. Batesii* and mandibles.

PLATE VII.

- Fig. 1.* Mandibles of *P. Grayii*.
Fig. 2. " *P. scaber*.
Fig. 3. " *P. bassamensis*.
Fig. 4. " *P. annulatipes*.
Fig. 5. " *P. lunatus*.
Figs. 6, 7. *P. longicornis* and mandibles.
Figs. 8, 9. *P. coronatus* and mandibles.
Figs. 10, 11, 12. *P. granulatus*, egg, and mandibles.

* They may be a little longer, as I was obliged to take the mandibles from a small example.

† In the above work several species of *Gasteracantha* are described, amongst these *G. resupinata* of Gerstäcker (which is figured) is probably identical with my *G. falcicornis*, recently published in my Monograph of the genus (Trans. Ent. Soc. p. 158. n. 18, pl. iv. fig. 10, May 1873); it, however, differs slightly and may be distinct.

Amongst the Lepidoptera figured on the plates, I notice "*Ismene Anchises*" very close to *I. Pansa* of Hewitson, previously described by Latreille and Doumet under different names.